

# CH. 10 - review

① Expl. var

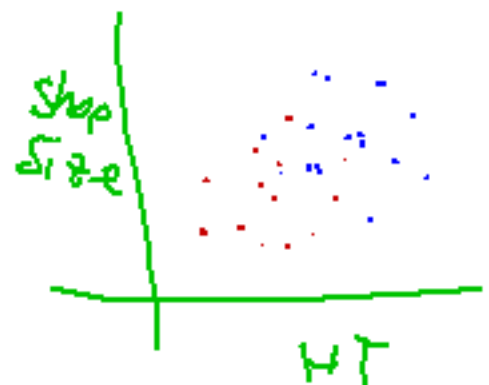
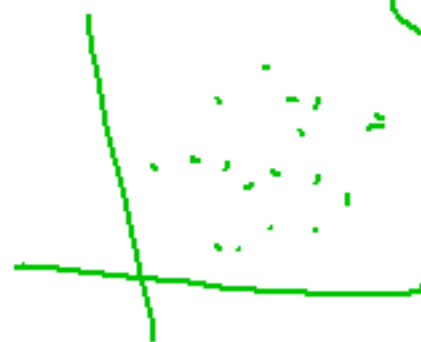
x-var  
trt.

Resp. var.

y-var - look @ how  
this var. changes  
due to x-var.

Ex: amt. med. vs. # tumors in rats  
expl. resp. var.

② - not categorical <sup>(1)</sup> can be seen thru  
symbols, colors



$r$  = correlation coefficient

- direction & strength  
of linear relationship btw 2 variables.

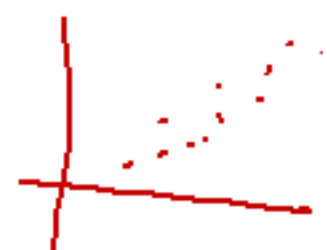


$r \approx 0$

\*strong

-  $-1 \leq r \leq 1$

- close to  $-1, 1 \Rightarrow$  strong relat.  
close to  $0 \Rightarrow$  weak "



$r^2$  = coefficient of determination

% of the change in y-var. that  
was due to change in x-var.



the LSR line

④ STATPLOT-  
Zoom 9

\* make sure graph is clear

⑤ Form: linear or curved  
or scattered

Direction: + or - association

Strength: Weak  
Mod.   
Strong 

LSR:  $\hat{y} = a + bx$

Annotations:  
-  $\hat{y}$  is circled.  
-  $a$  is labeled "intercept" with an arrow.  
-  $b$  is labeled "slope" with an arrow.

STAT-calc- #8: LinReg(a+bx)

LinReg(a+bx) x-list, y-list,  $\hat{Y1}$

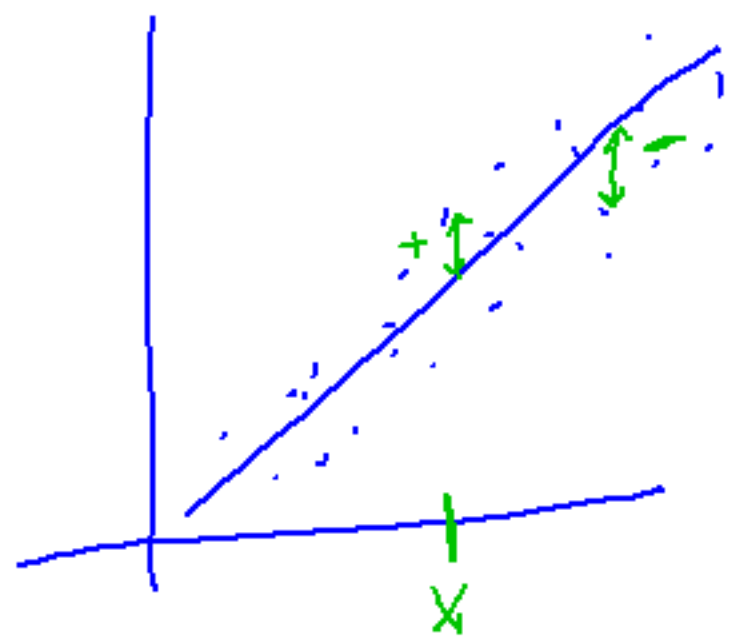
Annotations:  
-  $\hat{Y1}$  is circled.  
- "puts line on plot" points to the circled  $\hat{Y1}$ .  
- "vars-y-vars" points to the circled  $\hat{Y1}$ .

Prediction:

$$x=100 \quad y=?$$

$$\hat{Y1}(100)$$

LSR = least squares regression line

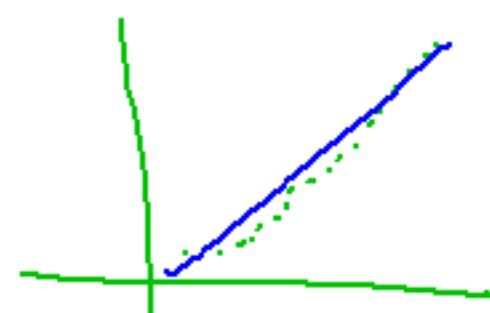


"avg" of scatterplot  
go thru  $(\bar{x}, \bar{y})$   
 $\sum + \text{errors} = \sum - \text{errors}$

Residuals = errors = observed - predicted  
 \* in y-direction

$$\sum \text{residuals} = 0$$

calc: graph x-list vs. RESID



Residual Plot = tells us how <sup>well</sup> ~~good~~ our line fit  
 our data another model  
 would be better

Scattered = LSR <sup>our data</sup>  
 is a good fit for data

